

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
MAINTENANCE OF WAY DIVISION
TRACK MATERIAL SPECIFICATION**

7"x 9"x 8'-6" Timber Railroad Ties

DESIGN

Crossties shall Grade 5, 7" x 9" x 8'-6". Please refer to Requisition order form for quantity.

The length and thickness specified are minimum dimensions. Ties one inch (1") wider or thicker or over three inches (3") longer at any point than the dimensions specified above will be rejected.

MATERIALS

Ties shall be Black Locust, Honey Locust, Red oak, White oak or Black Walnut or approved equal.

All ties shall be in accordance with AREMA Specification for ties, except where modified herein.

MANUFACTURE

All ties shall be manufactured from sound, live timber and must be free of any defects that may impair their strength or durability as a timber tie, as further described in this section. Every effort is to be made to get the felled timber to mill and milled timber to treatment facility for seasoning as quickly as possible to avoid wood fiber infection.

All ties shall be straight, well sawn on all four (4) sides, but square at the ends, have top and bottom parallel and have bark completely removed. Any ties which do not meet the following characteristics of good manufacture will be rejected: A tie will be considered straight when a straight line from a point on one end to a corresponding point on the other end is no more than 1-1/2" from the surface at all points. The top and bottom will be considered parallel if any difference at the sides or ends does not exceed 1/8". For proper seating of nail plate, tie ends must be flat, and will be considered square with a sloped end of up to 1/8" inch.

All ties shall be free from the following defects:

1. Decay

Timber ties that show decay of any nature and ties that show stain from being left in the log too long will be rejected. "Blue stain" is not considered decay and is permissible in any wood.

2. Holes

Ties will be rejected if a large hole, or numerous holes with the net effect of a large hole, is present. A large hole is one exceeding one-half inch (1/2") in diameter and three inches (3") deep outside the sections of the ties between twelve inches (12") from the end.

3. Knots

Ties will be rejected if a large knot, or numerous knots with the net effect of a large knot, is present. A large knot is a knot whose average diameter is greater than one-fourth (1/4) the width of the surface of which it appears within the area of the tie between twelve inches (12") from each end.

4.

5. Shakes

Shakes greater than one-third (1/3) the width of the tie shall be cause for rejection of the tie.

6. Splits

A tie will be rejected if a split exceeds five inches (5") long or one-half inch (1/2") wide.

6. Slanting grain

A tie will be rejected if a slant in grain in excess of one (1) in fifteen (15) is present, except in the case of woods with interlocking grain.

7. Wane - Excessive wane will be cause for rejection of the tie. A maximum of 1" wane will be allowed in the rail bearing area of the tie.

SEASONING

Crossties will be air seasoned prior to treatment. Ties shall be stacked for seasoning in accordance with AREMA Specifications, Chapter 3, Part 5, Section 6. Seasoning shall continue for at least twelve (12) months and no more than eighteen (18) months.

In the absence of air-seasoned crossties, the Vapor or Boulton drying process may be used with the permission of the Division Engineer or his designee.

Sufficient borer cores shall be taken of seasoned ties to determine that adequate drying has taken place so that ties may be satisfactorily penetrated with preservatives.

Prior to seasoning, all timber ties shall have nail plate anti-splitting devices applied at each end of the tie. Nail plates shall be Gang-nail, as manufactured by Portec, or approved equivalent, and shall be of at least 18 gauge galvanized steel conforming to ASTM A446, Grade 4, and the galvanizing conforming to ASTM A525. Dimensions shall be as recommended by manufacturer. One nail plate shall be positioned onto each end of the tie with the plate placed to cover the greatest area of splitting. Nail plates shall be applied by a mechanical device capable of squeezing the splits together bringing the tie back to its original dimensions prior to application.

TREATMENT

Timber tie treatment shall be retention of eight (8) pounds per cubic foot or refusal using the empty cell process in accordance with the latest standards of AREMA Specifications, Chapter 30, part 3 paragraph 3.7. The standard for the creosote solution is as per AWWA specification P2-06.

Sufficient number of borings shall be taken after treatment to determine proper penetration.

INSPECTION

Supplier shall retain the services of an independent inspection company who shall inspect all ties before, during and after treatment. Inspection of ties shall be in strict accordance with the American Wood Preservers Association (AWPA) Standard M-2.

Copies of inspection reports shall be sent to:

Director – Maintenance of Way
Building 2 Arlington Ave
Charlestown, MA 02129

Any ties found by the inspector to not meet this specification shall be rejected and not delivered to the MBTA.

SHIPMENT

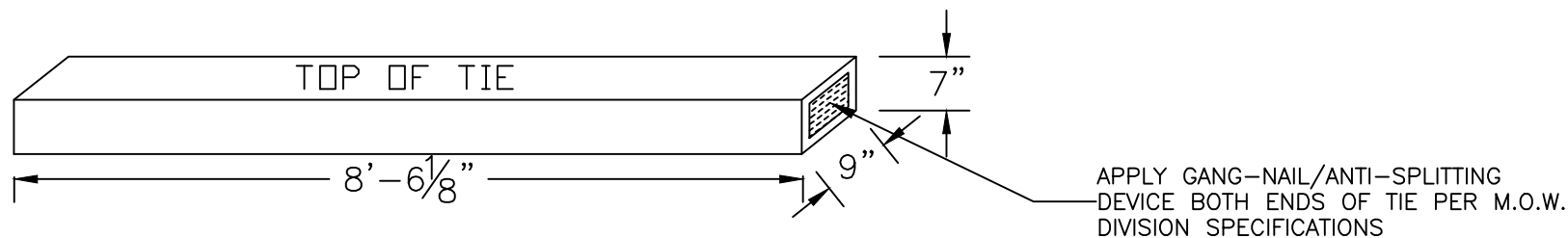
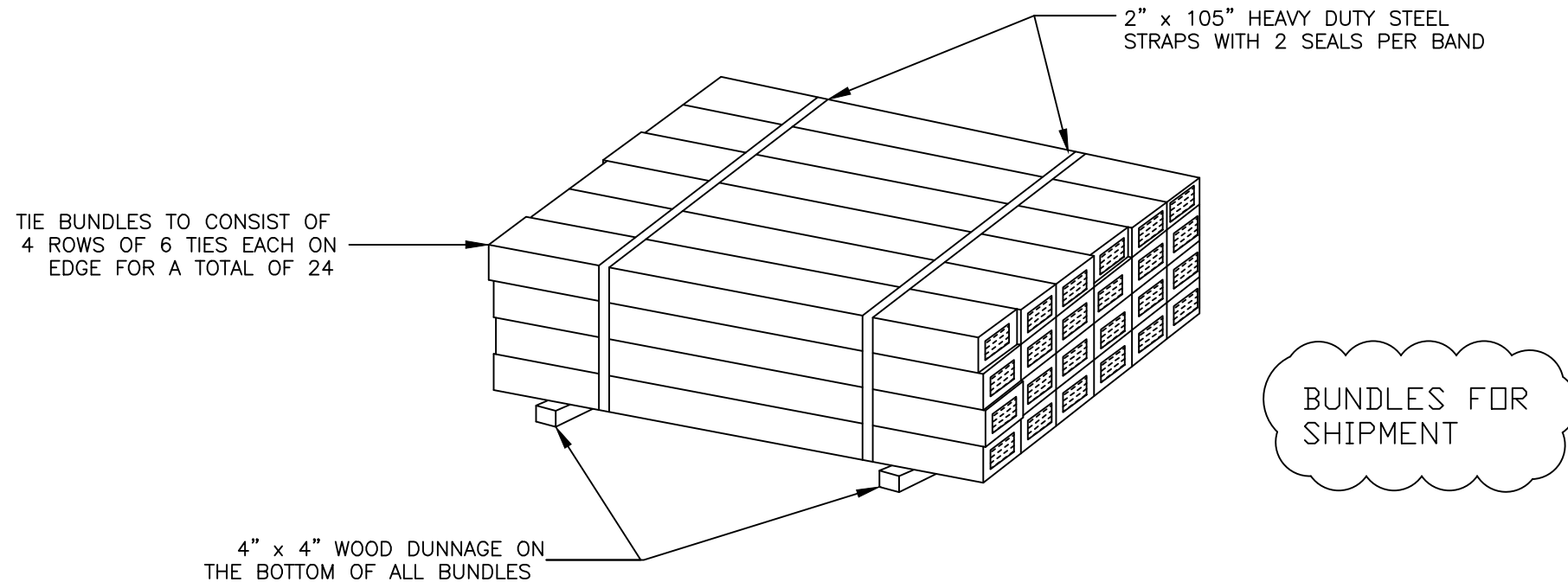
Ties shall be stacked neatly and securely banded with a sufficient number of heavy duty steel bands to prevent the ties from shifting while in shipment or being handled upon receipt. Refer to MBTA Drawings # 200 and 201

DELIVERY


Material shall be delivered via rail or road to the MBTA Charlestown Rail shop, 21 Arlington Ave, Charlestown, Massachusetts.

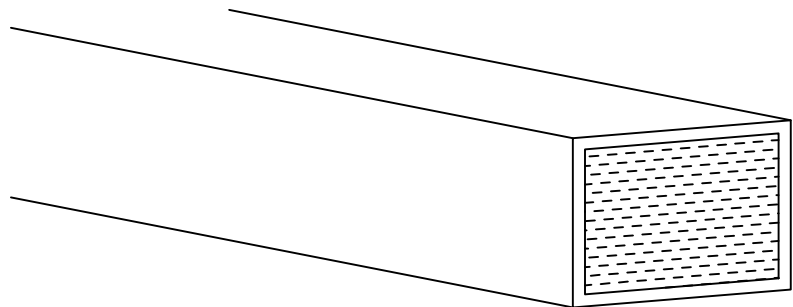
Notification of delivery is to be made two (2) business days in advance to the Supervisor of Yard and Services, (617) 222-5290.

To be accepted, timber ties delivered to the MBTA shall conform to these Specifications in all respects. Material is at the supplier's risk until accepted at the specified delivery site by an authorized representative of the MBTA. Material rejected for non-compliance with these Specifications will be returned to the supplier wholly at the supplier's expense.

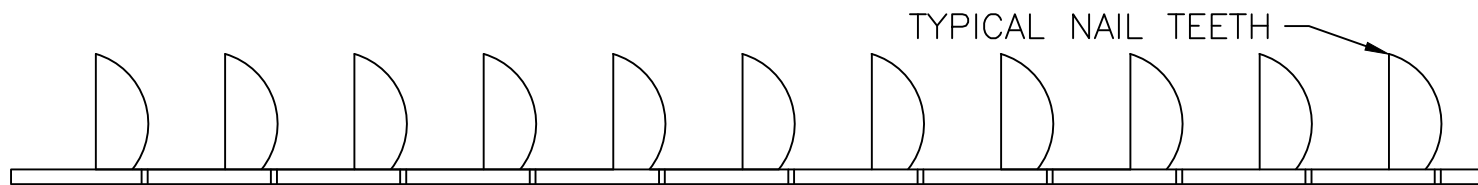


STANDARD WOODEN CROSSTIES

 <div>MASSACHUSETTS BAY TRANSPORTATION AUTHORITY</div>	M.O.W. DIVISION	DRG. NO. 200
		APR. 18, 2013 ISSUE DATE
STANDARD WOODEN CROSSTIE		
MGR. TRACK ENGINEERING		DIRECTOR — M.O.W.



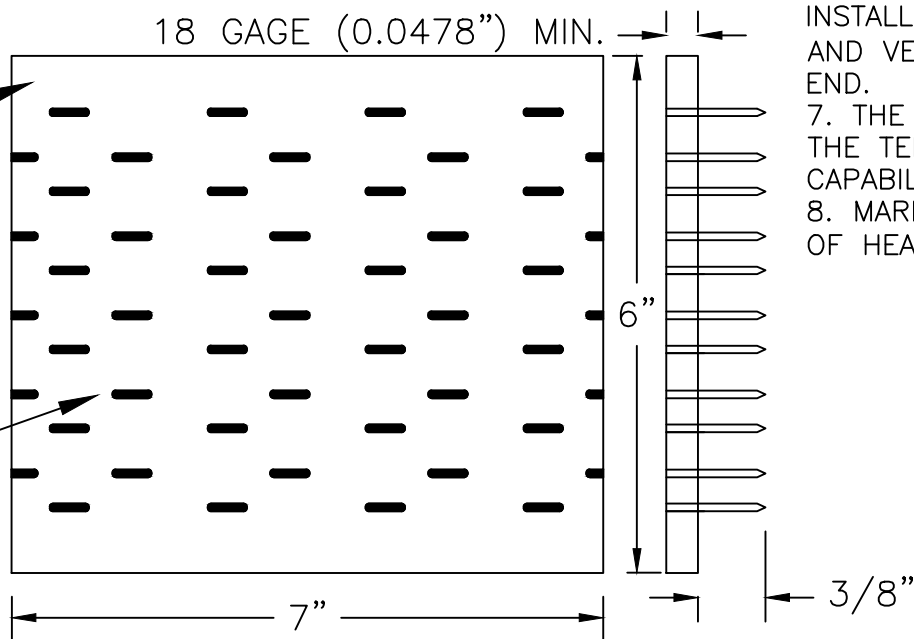
TYPICAL TIE END VIEW



TYPICAL NAIL TEETH


1/4" ROD FOUR
CORNERS

18 GA. (MIN.)
GALVANIZED
STEEL PLATE



NOTES:

1. THE ANTI-SPLITTING END PLATE SHALL BE MANUFACTURED FROM A MINIMUM 18 GA. (0.0478") GALVANIZED STEEL PLATE CONFORMING TO ASTM A446, GRADE 4, GALVANIZING CONFORMING TO ASTM A525
2. END PLATE SHALL HAVE NAIL TEETH NOT LESS THAN $\frac{3}{8}$ " IN LENGTH AND OF SUFFICIENT SHARPNESS TO FULLY PENETRATE HARDWOOD TIMBERS USED FOR CROSSTIES.
3. END PLATE SHALL BE MACHINE APPLIED TO THE TIE ENDS BY A MECHANICAL DEVICE CAPABLE OF SQUEEZING ANY SPLITS IN TIE ENDS TOGETHER BEFORE APPLICATION OF END PLATE. END PLATE APPLICATOR SHALL INSTALL END PLATES WITH UNIFORM PRESSURE AND MINIMUM TEETH BENDING AND SO THAT THE NAIL TEETH SIDE OF THE END PLATE IS FLUSH WITH THE END SURFACE OF THE TIE.
5. THE END PLATE IS TO BE INSTALLED IN NEW TIES PRIOR TO SEASONING.
6. THE CENTER OF THE END PLATE SHALL BE INSTALLED NO MORE THAN $\frac{1}{2}$ " OFF THE HORIZONTAL AND VERTICAL CENTERLINE INTERSECTIONS OF THE TIE END.
7. THE END PLATE SHALL BE FABRICATED SO THAT THE TEETH TWIST VERTICALLY FOR BETTER GRIPPING CAPABILITY IN THE TIE.
8. MARK AND INSTALL PLATES TO INDICATE LOCATION OF HEARTWOOD (KERF MARKS).

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	M.O.W. DIVISION	DRG. NO.	201
			APR. 18, 2013 ISSUE DATE	① ISSUE NO.
ANTI-SPLITTING END PLATE FOR WOODEN CROSS-TIES				
MGR. TRACK ENGINEERING		DIRECTOR - M.O.W.		